

ORIGINAL

RECEIVED

DOCKET FILE COPY ORIGINAL

AUG 22 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
)
Advanced Television Systems)
and Their Impact Upon the) MM Docket No. 87-268
Existing Television Broadcast)
Service)

TO: The Commission

**SUPPLEMENTAL INFORMATION IN SUPPORT OF THE
PETITION FOR PARTIAL RECONSIDERATION
OF SHENANDOAH VALLEY EDUCATIONAL TELEVISION CORPORATION**

Shenandoah Valley Educational Television Corporation ("Shenandoah"), licensee of public station WVPT(TV) (NTSC Channel 51, Staunton, Virginia), hereby files this supplemental information in support of the Petition for Partial Reconsideration of Shenandoah Valley Educational Television Corporation, filed in the above-captioned proceeding on June 13, 1997.^{1/} The supplemental information provided herein further supports Shenandoah's request that the Commission change the DTV channel assigned to WVPT(TV) from Channel 19 to Channel 11. Shenandoah's June 13 petition and July 31

^{1/} Petition for Partial Reconsideration of Shenandoah Valley Educational Television Corporation, MM Docket No. 87-268 (June 13, 1997).

No. of Copies rec'd
List ABCDE

0410

reply^{2/} set forth public interest and engineering information in support of Shenandoah's request, and this information will not be repeated here.

Much of Shenandoah's service area is within the National Radio Quiet Zone (the "Quiet Zone"). The Quiet Zone was established to protect the Naval Research Laboratory Station ("NRL") at Sugar Grove, West Virginia and the National Radio Astronomy Observatory ("NRAO") at Green Bank, West Virginia, and has imposed limitations on Shenandoah's ability to provide service in the area.

As set forth in the attached engineering report prepared by Moffet, Larson & Johnson, Inc. ("MLJ"), Shenandoah's DTV operations also will be constrained by the Quiet Zone restrictions. After determining that Channel 11 would be a viable alternative channel on which to operate WVPT(TV), MLJ contacted the NRAO to determine the relative feasibility of operating on Channel 11 versus Channel 19, given the Quiet Zone restrictions. MLJ determined that it would not be necessary to protect the NRL, because the broadcast television frequency band is below 1 GHz.^{3/}

^{2/} Reply to Jefferson-Pilot Communications Company's Opposition to Petition of Shenandoah Valley Educational Television Corporation for Partial Reconsideration, MM Docket No. 87-268 (July 31, 1997). The reply was filed in response to an opposition filed by Jefferson-Pilot Communications Company, which seeks to have its DTV channel assignment in Richmond changed from Channel 54 to Channel 11, which it would use as a temporary home for its DTV operations until it returns to Channel 12 (its current NTSC channel) after the transition. Opposition to Petition of Shenandoah Valley Educational Television Corporation for Partial Reconsideration filed by Jefferson-Pilot Communications Company, MM Docket No. 87-268 (July 18, 1997).

^{3/} Engineering Report at 2.

Shenandoah will be required to protect the NRAO, however, and this requirement will affect the design of the WVPT(TV) DTV transmitting facility.^{4/}

The NRAO responded to MLJ's inquiry in a letter dated August 18, 1997.^{5/} The NRAO's response made it clear that Shenandoah would face formidable technical obstacles in providing DTV service on Channel 19 consistent with the Quiet Zone restrictions. Overcoming these technical obstacles, even if feasible, would impose a heavy financial burden on an already struggling noncommercial and educational television station.^{6/} Moreover, if WVPT(TV) were forced to reduce its power on DTV Channel 19 to protect the NRAO, this reduction in power could threaten WVPT(TV)'s ability to provide adequate service to its viewers.^{7/} These problems would compound the public interest harms and financial burdens already resulting from the displacement of Shenandoah's Channel 19 translator in Charlottesville.^{8/} Thus, Shenandoah's Channel 19 DTV assignment poses a real threat to WVPT(TV)'s ability to continue providing quality noncommercial and educational programming to its viewership. WVPT(TV) is the smallest public television station in Virginia both in budget and in staff, and these obstacles threaten the very existence of the station.

^{4/} *Id.*

^{5/} *Id.* at Figure 1.

^{6/} *Id.* at 3-4.

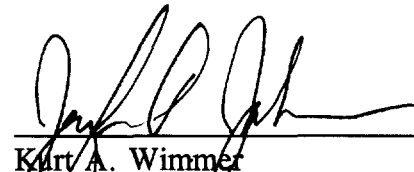
^{7/} *Id.* at 3.

^{8/} The public interest harms stemming from the displacement of Shenandoah's Charlottesville, Virginia translator are set forth in Shenandoah's petition and reply.

By contrast, the constraints associated with Shenandoah's DTV operations on Channel 11 would be far less severe.^{2/} Shenandoah would face fewer technical obstacles in constructing an antenna which would adequately protect the NRAO. In addition, Shenandoah would not face the staggering economic consequences resulting from the loss of its Charlottesville service area and the construction and operation of a highly specialized antenna. While a commercial television station might be able to absorb such costs, they are potentially devastating to a small public station like WVPT(TV). Finally, the quality of service provided to WVPT(TV)'s viewership, including a full schedule of in-school, over-the-air educational programs, would be preserved.

For the forgoing reasons, Shenandoah again urges the Commission to change the DTV assignment for WVPT(TV) from Channel 19 to Channel 11.

Respectfully submitted,



Kurt A. Wimmer
Jennifer A. Johnson

COVINGTON & BURLING
1201 Pennsylvania Avenue, N.W.
Post Office Box 7566
Washington, D.C. 20044-7566
(202) 662-6000

August 22, 1997

*Counsel for Shenandoah Valley
Educational Television Corporation*

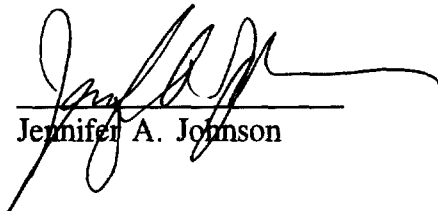
^{2/} Engineering Report at 3.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Supplemental Information in Support of the Petition for Partial Reconsideration of Shenandoah Valley Educational Television Corporation has been served by first-class mail, postage prepaid, this 22nd day of August, 1997 on:

James R. Bayes, Esq.
Rosemary C. Harold, Esq.
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, D.C. 20006

Counsel for Jefferson-Pilot Communications Company



Jennifer A. Johnson

ENGINEERING STATEMENT
SUPPLEMENTAL INFORMATION IN SUPPORT OF THE
PETITION FOR PARTIAL RECONSIDERATION OF
SHENANDOAH VALLEY EDUCATIONAL TELEVISION CORPORATION
OF THE SIXTH REPORT AND ORDER IN MM DOCKET NO. 87-268

August 22, 1997

Shenandoah Valley Educational Television Corporation.
Harrisonburg, Virginia

Engineering Statement
Supplemental Information in Support of the
Petition for Partial Reconsideration of
Shenandoah Valley Educational Television Corporation
of the Sixth Report and Order in MM Docket No. 87-268

The firm of Moffet, Larson and Johnson, Inc. (MLJ) has been retained by Shenandoah Valley Educational Television Corporation (SVETC), licensee of television station WVPT, NTSC channel 51, Staunton, Virginia to provide additional engineering information in support for its Petition for Partial Reconsideration of the Sixth Report and Order in MM Docket No. 87-268 (Sixth Report). By the Sixth Report WVPT was allotted channel 19 for DTV operation. This channel is considered unacceptable for a number of reasons as discussed in the SVETC petition including interference to existing service of WVPT's channel 19 translator and the opportunity to improve WVPT service. Television channel 11 can be allotted to Staunton in compliance with the new distance separation rules. Thus, SVETC requested the assignment of television channel 11 for its digital operation.

Since the filing of it's Petition SVETC has conducted interference studies to determine the feasibility of DTV operation on channel 11 at Staunton. These were filed in SVETC's Reply in response to the Opposition to Petition of Shenandoah Valley Educational Television Corporation for Partial Reconsideration of the Sixth Report and Order in MM Docket No. 87-268 (Sixth Report) filed by Jefferson Pilot Communications Company, (Jefferson Pilot). Jefferson Pilot is the licensee of station WWBT(TV) on NTSC channel 12 at Richmond, Virginia and requests the assignment of channel 11 for DTV operation of WWBT. Interference studies were filed as stated in the WVPT original petition and need not be repeated in this statement.

The WVPT transmitting site is located within the National Radio Quiet Zone (NRQZ) which was established to protect the National Radio Astronomy Observatory (NRAO) at Green Bank West Virginia and the Naval Research Laboratory (NRL) facility at Sugar Grove, West Virginia from interference. It is no longer necessary to protect NRL at frequencies below approximately 1 GHz but the requirement to protect NRAO affects the design of the WVPT transmitting facility. There are substantial differences in the impact of NRAO on WVPT between channels 11 and 19. The purpose of this statement is to address those differences.

**Shenandoah Valley Educational Television Corporation.
Harrisonburg, Virginia**

The maximum power density allowed by NRAO is 30 dB greater on channel 11 than on channel 19, which is a power ratio of 1000 to 1. For comparison purposes NRAO was requested to calculate the permitted ERP toward the observatory on channel 11 and on channel 19. The reply from NRAO is included as Figure 1. The calculations were made for operation at the WVPT site with the DTV antenna radiation center at the authorized WVPT height; this is the standard procedure for DTV replication. The results of the calculations show that the permissible Effective Radiated Power (ERP) for operation on channel 11 is 158 Watts (-8.0 dBk) compared with 2.2 Watts (-26.6 dBk) on channel 19. The permitted ERP on channel 11 is thus 71.8 (18.5 dB) times the ERP on channel 19. The ERP to replicate WVPT service is 3.2 kW (5.1 dBk) on channel 11; for channel 19 it is 50 kW (17.0 dBk). An antenna front to back ratio of 13.1 dB is required on channel 11 and 43.6 dB is required on channel 19, a difference of more than 30 dB in favor of channel 11.

The present WVPT antenna is a specially designed "billboard" antenna. The antenna consists of a large flat plane with a slot radiator in the center. Quarter wave "choke" slots are included at the ends of the plane to reduce radiation towards the protected installations. This antenna is resonant and can only perform properly on channel 51. To operate on channel 19 a new antenna with extreme suppression of 43.6 dB is required. At this time, to achieve such suppression to NRAO a highly directional standard antenna would be employed with the null towards NRAO. An additional "phasing" antenna would be used to cancel the radiated field in the standard antenna's null, to the extent feasible, and thus reduce the ERP towards NRAO. These antennas are more complicated than standard antennas and must be field adjusted to achieve the required suppression. In addition, NRAO requires the taking of measurements in the field to verify performance of the antenna system. Field strength measurements are required at the first diffracting obstacle, the peak of Elliot Knob in this case, with and without the phasing antenna. In this manner the total suppression of the antenna system is determined. If the required suppression cannot be achieved, it would be necessary to reduce ERP proportionately which would reduce WVPT service. In contrast, although the channel 11 suppression of 13.1 dB exceeds the maximum permitted by the rules (10 dB) for VHF TV, such suppression can be readily achieved by standard antennas without the inherent complexity and instability of phasing antennas. Measurements in the field would not be required for channel 11 operation.

In summary, channel 11 can be allotted to Staunton, Virginia in compliance with the new distance separation requirements of the rules. WVPT DTV operation on channel 11 would result in relatively low levels of new predicted interference to analog NTSC service as shown in SVETC's Reply. In addition operation on channel 11 at Staunton is superior to operation on channel 19 with regard to interference to the NRAO. The constraints on the WVPT DTV transmitting antenna are much less severe on channel 11 than on channel 19. Station WVPT could operate on channel 11 with a relatively simple, less expensive antenna system than on channel 19. SVETC has obtained cost estimates from antenna and transmitter manufacturers for

ENGINEERING REPORT

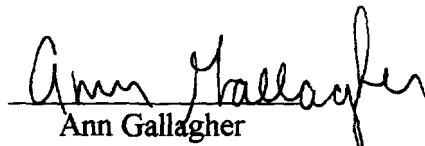
1110 N. Glebe Road, Suite 800


Arlington, VA 22201

Shenandoah Valley Educational Television Corporation.
Harrisonburg, Virginia

operation on channel 11 and on channel 19 as described above. The costs for transmission equipment¹ for operation on channel 11 are \$201,000 for the transmitter and \$102,000 for the antenna which results in a total of \$303,000. For operation on channel 19, the costs are \$375,000 for the transmitter and \$270,000 for the antenna or a total of \$645,000. Thus, the estimated cost of UHF operation exceeds that of VHF by \$342,000 or more than 2 to 1.

The undersigned certify that this statement and the attached figure were prepared by them or under their supervision and are true and correct to the best of their knowledge, information and belief.


Ann Gallagher
Senior Engineer


Joseph W. Stielper
Senior Engineer

¹ Cost of other transmitting equipment is relatively small compared with the transmitter and antenna costs and is thus not necessary for inclusion in this comparison and in general costs would be higher for UHF than for VHF. Transmissions line costs can be much higher at UHF than at VHF however, in this case the transmission line run is very short.



NATIONAL RADIO ASTRONOMY OBSERVATORY

POST OFFICE BOX 2 GREEN BANK, WEST VIRGINIA 24944-0002
TELEPHONE (304) 456-2011 FAX (304) 456-2200

18 August 1997

Ann Gallagher
Moffet, Larson & Johnson, Inc
Suite 800
1110 North Glebe Road
Arlington, VA 22201

VIA Fax@703-741-0312

Re: TV Broadcast Radio Service
WVPT-TV
Preliminary evaluation of proposed
198-204 MHz (TV Channel 11) and
500-506 MHz (TV Channel 19) transmitter
on Elliotts Knob, Virginia
per your faxed letter dated 7 August 1997
NRQZ#P935/8AUG97

Dear Ms. Gallagher,

When preparing the FCC application, you will need to provide for the limit of effective radiated power relative to a dipole (ERPd) toward Green Bank, WV.

The NRAO must be notified when an application is mailed to the FCC. The notice should consist of a copy of the completed, signed, and dated FCC application form plus a cover letter giving the antenna gain-pattern and orientation sufficient to verify the ERPd toward Green Bank. Then the NRAO will comment to the FCC.

The ERPd limits toward Green Bank and the antenna site parameters used for this evaluation are:

Location:	Elliots Knob, VA	
Latitude:	38° 09' 54" North	
Longitude:	79° 18' 51" West	
Ground Elevation (AMSL):	4335 Feet	
Antenna Height (AGL):	35 Feet	
Frequency:	198.0 MHz	500.0 MHz
ERPd Limit:	158.0 watts	2.2 watts
Azimuth to Green Bank:	303.2° True	

The Navy research facility at Sugar Grove, WV, will not object to these transmitters.

If I can be of further assistance, please feel free to contact me.

Sincerely,

Wesley A. Sizemore
Scientific Associate

FIGURE 1